AHRQ
Agency for Healthcare Research and Quality
Advancing Excellewnce in Health Care

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Structuring Care Recommendations for Clinical Decision Support

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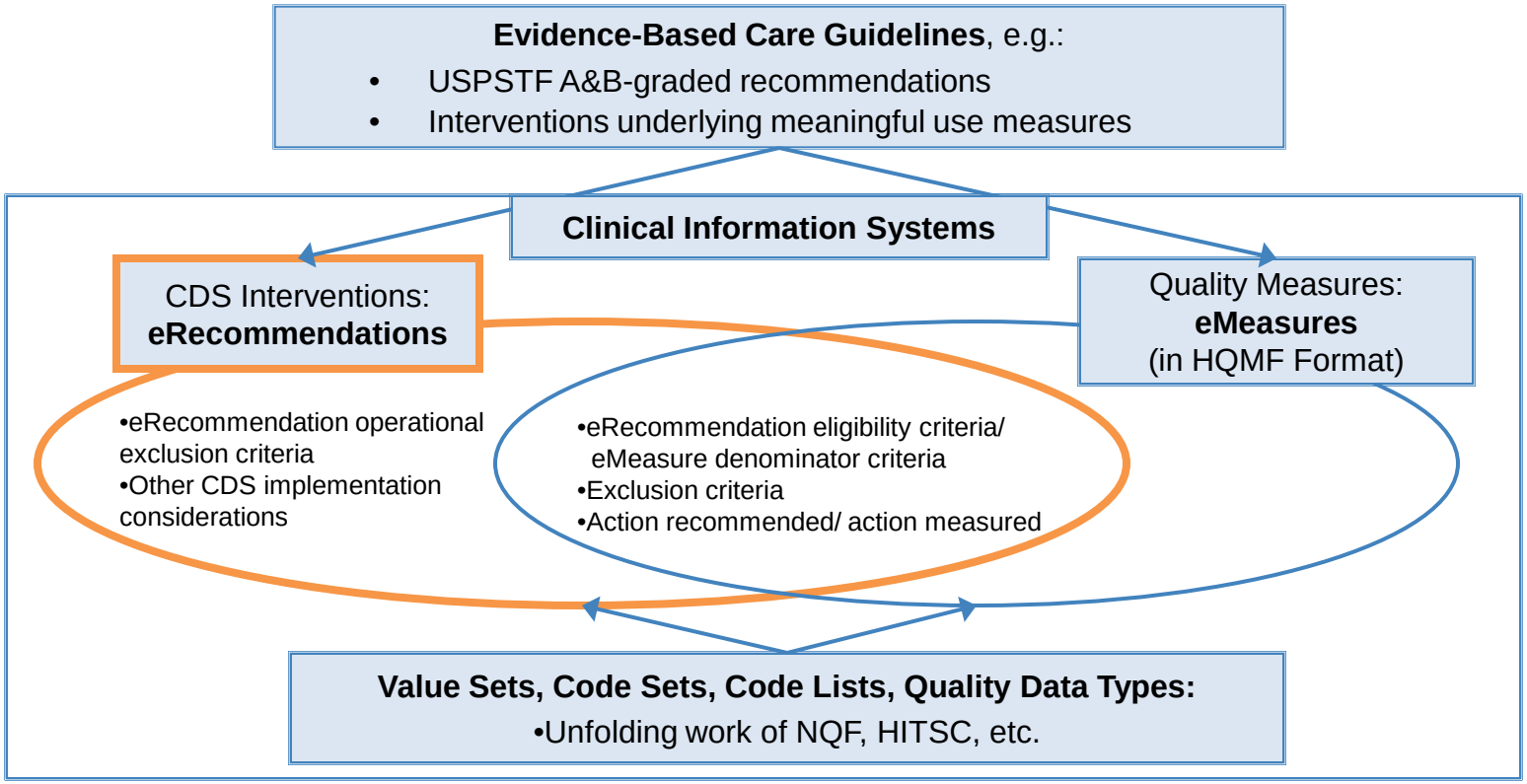
Goal

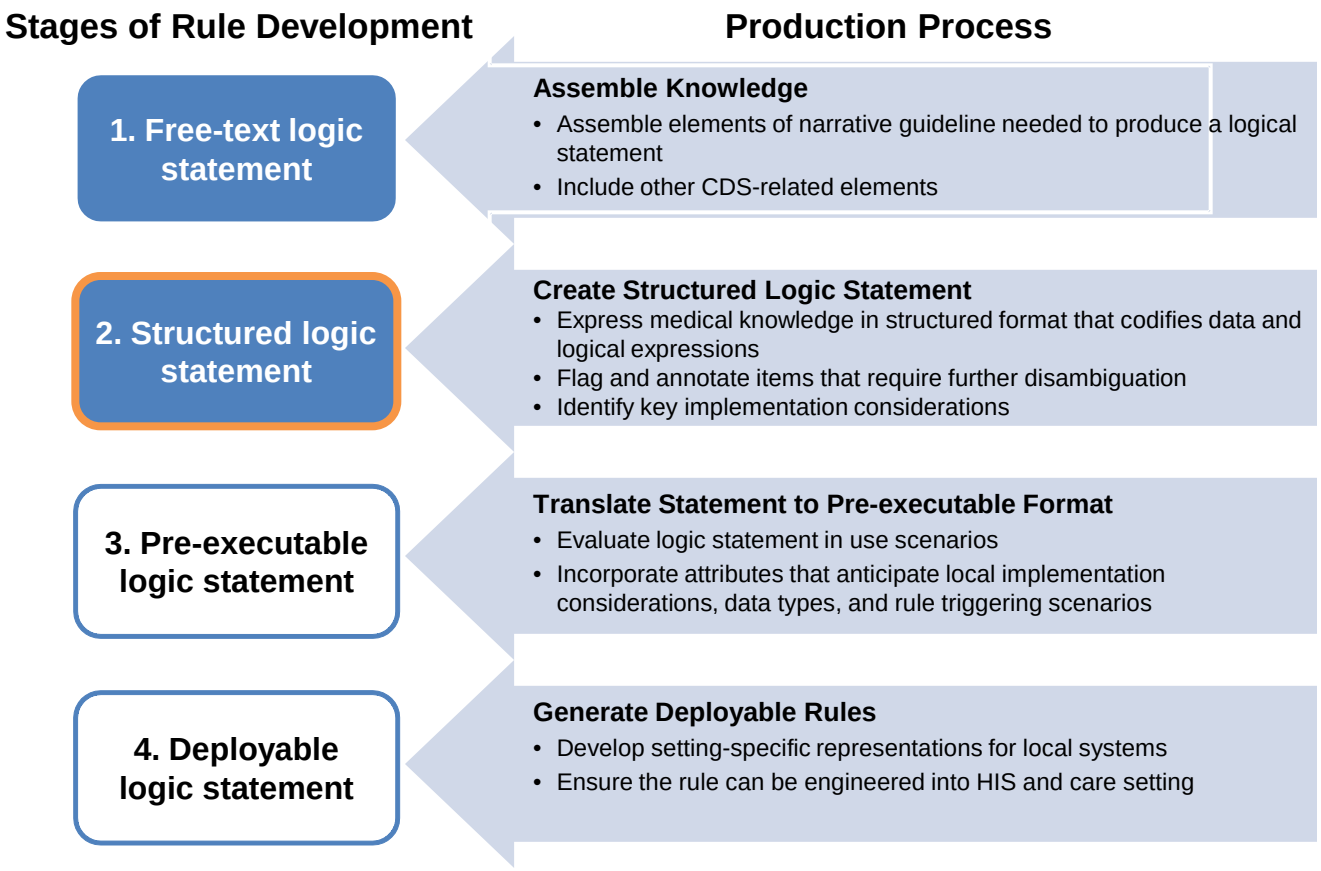
To accelerate widespread uptake of well-accepted, evidence-based patient care recommendations in clinical information systems by developing a formal method for translating narrative into structured statements useful for further local processing into CDS rules.

Conceptual Approach

Leveraging Quality Measurement Standards and EHR Integration to Support Widely Useful Structured Recommendations for CDS Rules



Operational Approach



eRecommendation Template/Sample

1. Header Information

eRecommendation Name	USPSTF SCREENING FOR BREAST CANCER (B Recommendation on mammography only)	**Recommendation Set**	USPSTF A and B Recommendations
eRecommendation ID	USPSTF-MAMMO-B-REC	**Set ID**	USPSTF-A-B-RECS
eRecommendation Version Date/Number		**Recommendation Version Date/Number**	2 (revision of 2002 guidelines)
Template Version Date/Number			
Related eMeasure(s)	PQRI112:Preventive Care and Screening: Screening Mammography [PQRI age range40 69]		
Author			
Verified by			
Maintained by	Agency for Healthcare Research and Quality (AHRQ) and Preventive Services Task Force (USPSTF)		
Description/Purpose	U.S. Preventive Services Task Force (USPSTF) recommendation statement on screening for breast cancer in the general population.		
Recommendation Text from Source	**Summary Statement**	The USPSTF recommends biennial screening mammography for women between the ages of 50 and 74 years.	
	Additional Inclusion/Exclusion Criteria	. . . . . This recommendation statement applies to women 40 years or older who are not at increased risk for breast cancer by virtue of a known underlying genetic mutation or a history of chest radiation.	
Setting (if specified by Source)	Not specified. See implementation considerations.		
Recommendation classification	Screening: primary prevention		
Rationale	**Importance** Breast cancer is the second-leading cause of cancer death among women in the . Widespread use of screening, along with treatment advances in recent years, has been credited with significant reductions in breast cancer mortality. **Detection** Mammography, as well as physical examination of the breasts (CBE and BSE), can detect pre-symptomatic breast cancer. Because of its demonstrated effectiveness in randomized, controlled trials of screening, film mammography is the standard for detecting breast cancer; in 2002, the USPSTF found convincing evidence of its adequate sensitivity and specificity. **Benefits of Detection and Early Intervention:** There is convincing evidence that screening with film mammography reduces breast cancer mortality, with a greater absolute reduction for women aged 50 to 74 years than for women aged 40 to 49 years. The strongest evidence for the greatest benefit is among women aged 60 to 69 years.		
Reference	Clinical Guidelines: Screening for Breast Cancer: Preventive Services Task Force Recommendation Statement. U.S. Preventive Services Task Force. Ann Intern Med 151:716-726		
Reference URL	http://www.ahrq.gov/clinic/uspstf/uspsbrca.htm		

eRecommendation Template/Sample (Cont.)

2.a Data definitions

Category	Data Elements	Relevant Notes
Eligibility/ Inclusion-related data	**Demographic** •Target gender: F, Target age low limit: 50, Target age high limit: 74 **Condition/ risk** •[*not relevant to mammography example*]	For PQRI 112 to which this logic statement is related, age high limit = 69
Intervention interval	Screening interval: 2 years *[See Section 3. Implementation Considerations below for details on operational exclusion criteria and related logic where screening interval is used]*	
Exclusion criteria-related data	**High risk patients** <Value set: History of chest radiation > •Quality data type: Procedure Result, Code set: (CPT 4, ICD9, SNOMED), Code list: {list of relevant codes relating to Hx of chest radiation}. <Value set: Known genetic mutation, BRCA1, BRCA2, [possibly others]> •Quality data type: Laboratory test result, Code set: (LOINC, SNOMED), Code list: {list of relevant codes for genetic tests} <Value set: mammogram results documented within 2 years > •Quality data type: Diagnostic study result , Code set: (CPT,LOINC, SNOMED), Code list: {list of relevant codes} **Other exclusion-related data** •[*not relevant to mammography example*]	High risk patients may require a different screening protocol. The USPSTF recommendation states that a known genetic mutation or a history of chest radiation puts a woman at an increased risk for breast cancer and excludes this group from the screening recommendation. The recommendation ***implies*** that a different screening/treatment recommendation/protocol applies to this high risk group, although it does not make explicit such a recommendation/protocol. Therefore, it might be appropriate for implementers to consider if there is a recommendation/protocol for the screening/treatment of the given high risk group in place in the system: •If there is a protocol, and if there is evidence that a high risk patient is already on such a protocol, **exclude** this patient from the recommendation. •If there is a protocol, and a high risk patient is not on it, **recommend** that the patient be put on the protocol •If there is no protocol, or if there is evidence that the patient is on such a protocol elsewhere (e.g., having had BRCA1/2 testing), **exclude** this patient. •Otherwise, **do not exclude** this high risk patient.
Operational exclusion criteria-related data	[*Will depend on implementation considerations/choices: See Section 3, Implementation Considerations for examples*]	Optional element: implementer may define and use operational exclusion criteria pertinent to local needs and constraints. For example, if the intervention recommended is addressed/pending, or if patient has condition being screened and is already undergoing treatment, etc. then implementers may wish to suppress the intervention recommendation to minimize false positive notifications. See **Implementation Consideration** section for further details and examples.
Action related data	<Value set: Bilateral mammogram> •Quality data type: Diagnostic Study Order , Code set: (CPT,LOINC, SNOMED), Code list: {list of relevant codes for screening mammography tests}	

eRecommendation Template/Sample (Cont.)

2.b Logic Statement

Category	Logic Elements	Relevant Note
<Eligibility/inclusion criteria>	Patient gender = Target gender AND: <Patient age >= Target age low limit> AND <Patient age <= Target age high limit> *AND:* *<Evidence of condition/risk = non-null]>*	<Evidence of condition/risk> statement is a template placeholder for other rule types: not pertinent to this breast cancer screening sample
<Exclusion criteria>	**<Patients for whom a different intervention protocol may be warranted>** •<Value set: History of chest radiation > = non-null •OR: <Value set: Known genetic mutation > = non-null **<Patients that have already received intervention within recommended interval>** <Value set: mammogram results documented within 2 years > = non-null	See section 3, subsection on Optimizing Rule Specificity for further details on operational exclusion criteria, e.g., related to pertinent pending interventions, etc.
<Operational exclusion criteria>	[*Will depend on implementation considerations/choices: See Section 3, Implementation Considerations for examples*]	
<Action>	**<Recommended action: perform Intervention: procedure/test/medication/counseling/etc.>** •<Bilateral mammogram> o Quality data type: Diagnostic Study Order> o <Code set: (CPT,LOINC, SNOMED) o Code list: {list of relevant codes for screening mammography tests}	

eRecommendation Template/Sample (Cont.)

3. Implementation Considerations

OPTIMIZING RULE SPECIFICITY:

Operational data
o Notification fired : Provider, date; …

Operational exclusion criteria data
o Tests for diagnosis or problem in process or done within specified screening interval: …

o Pre-existing condition diagnosis or problem: Rule having fired within specified alerting interval; …

DETERMINING RULE TRIGGERING:
• Is operation interactive/real time?... Can information be obtained from patient at time of rule firing?

DEFINING NOTIFICATION APPROACH:
• User notification: Is it desirable to set an indicator that a notification has been delivered? …

OBTAINING KEY DATA:
• What minimum data are needed to fire a useful rule for this recommendation in your organization?…

ACCOMODATING LOCAL CLINICAL POLICIES:
• Target age high limit; …

Progress to Date

- Needs assessment/methods draft report to AHRQ
  - Talked with 20+ stakeholders
  - Reviewed related initiatives
  - Created and vetted draft template
- Applying eRecommendation template
  - Drafted eRecs for most USPSTF A & B recommendations
  - Producing human readable format (Excel)
  - Continuing refinement of template/methods
- Selected meaningful use measures as '2nd guideline'

Interactions with Stakeholders (potential users)

- Positive feedback on template, interest in uptake
- Potential uses:
  - Apply eRec content to speed CDS rule development in Fed/non-Fed care delivery organizations, HIT suppliers
  - Use eRec template to structure local guidelines for rule development in large health systems
  - Help guideline developers provide less ambiguous recommendations more suitable for HIT deployment
  - Spur further research on ‘implementation considerations’

Potential Users

- IHS (Teresa Cullen, Chris Lamer)
- DoD (Peter Park)
- VA (Linda Kinsinger, Patrick Redington)
- Navy (Emory Fry)
- CDC (HIV/STD, Oral Health)
- Kaiser Permanente, Southern Cal region
- Partners Healthcare
- Mayo Clinic (HealthVault PHR)
- AMDIS CMIOs (Ohio State, Methodist Medical Center (IL), Advocate Healthcare, and Memorial Hermann)
- EHR vendors (EHRA)
- NHLBI

Impact of Project to Date

- Stimulating broad conversation among key CDS players (CIS/guideline suppliers, implementers)
- Cultivating synergies between CDS and performance measurement (from goals to codes)
- Garnering attention of guideline developers
- Demonstrating progress toward widely useful, formal logic structures to support measurable, CDS-enabled healthcare performance improvement

Future Directions

- Finish translating initial recommendations; provide XML and test/refine
- Flesh out implementation considerations
- Collaborate with CDS implementers to process eRecs into local CDS rules and evaluate
- Expand methods to other interventions / conditions
- Enhance dissemination (e.g. via repositories, guideline community, HIT suppliers, others)

Integrate with Other AHRQ-Funded HIT Initiatives

- Further explore relationship with other initiatives/tools (e.g., GEM, CDSC, NHIN, NQF CDS taxonomy, USHIK)
- Use to gain insights on and improve chain of guidelines-to-alerts-to-better-outcomes